



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : Confirmation No. 3727  
Yukio IMAIZUMI et al. : Attorney Docket No. 2006\_0473A  
Serial No. 10/574,691 : Group Art Unit 1792  
Filed April 5, 2006 : Examiner Katherine A. Bareford  
METHOD OF THERMAL SPRAYING : Mail Stop: AMENDMENT

---

## DECLARATION UNDER 37 CFR ' 1.132

I, the undersigned, Yasuyuki KAWAGUCHI, am a citizen of Japan, graduated from Nagasaki Prefectural Nagasaki Technical High School, and am now the Manager R&D Department of Plazwire Co., Ltd. (1-7-11, Takasago, Chuo-ku, Fukuoka City 810-0011 Japan), am not a named inventor in the present application but the one of the inventors of Japanese Patent Application number 2007-44354 related to the technical field of this application, have worked in the field of thermal spraying for 9 years and 10 months and am a person skilled in this art, and am the author and/or co-author of "Long-term corrosion control thermal spraying method by Al-5Mg alloy thermal spraying (presented in the Kyushu branch technical symposium of Japan Association of Corrosion Control, 2006.3.30)", "Plazwire method - Applicable cases of Long-term corrosion control thermal spraying method by Al-5%Mg alloy thermal spraying- (presented in the technical seminar of High Pressure Institute of Japan, 2007. 2.9)", "Applicable cases of Al-5%Mg alloy plasma thermal spraying method (presented in the 27<sup>th</sup> corrosion control technical presentation of Japan Association of Corrosion Control, 2007.7.5-2007.7.6)", and "Current status and development in plazwire method (presented in the Kyushu corrosion control managers society memorial symposium of Japan Association of Corrosion Control, 2008.6.6)".

I have carefully reviewed the original disclosure in the above-referenced U.S. patent application, including the original specification and claims and the original drawings. After my review of the application as originally filed, I note the following:

(1) The application relates to a method of thermal spraying to form a coating for preventing corrosion (see paragraph [0001]);

(2) To form the coating for preventing corrosion, the original disclosure teaches applying a spray coating "M" to a surface of a thermal spray subject (metal body) "S" (see paragraph [0013]);

(3) The original disclosure teaches that spray coating "M" is composed of a number of particles "m" which adhere to the surface of the metal body "S" (see paragraph [0013] and [0023]);

(4) The original disclosure teaches that as the particles "m" are sprayed against the metal body "S", the particles "m" collide against a surface and are flattened (see paragraph [0023] and Figure 1A);

(5) The original disclosure teaches that as the particles "m" are sprayed against the metal body, some particles "m" will directly contact and directly adhere to the metal body "S," while other particles "m" will directly contact and directly adhere to underlying particles "m" (see Figures 1A through 1C and paragraph [0024]);

(6) Based on my general knowledge of thermal spray coatings, I am aware that individual particles of a spray coating are applied to a surface of a body to be coated so as to form multiple layers of particles over the body to be coated, so as to ensure that the body is completely coated;

(7) In view of the corrosion-prevention purpose of the above-referenced application as noted in item (1) above, I believe that my general understanding of thermal spray coatings as noted in item (6) above is applicable to the present application in order to ensure that the metal body is completely covered to achieve the corrosion-prevention purpose;

(8) Consistent with items (5) through (7) above, I have noted that the original disclosure of the above-referenced application does not require that each of the particles *directly* adhere to the metal body "S";

(9) The original disclosure teaches that the thermal spraying is performed "in such a manner that an average area of each of molten particles of the thermal spray material when the molten particles have stuck to the surface of the thermal spray subject is 10000 to 100000  $\mu\text{m}^2$ " (see paragraphs [0013], [0023], [0024], and [0026]);

(10) In view of items (5) though (8) above, it is my understanding that the phrase "when the molten particles have stuck to the surface of the thermal spray subject" from the section of the original disclosure quoted in item (9) means when the particles "m" are either stuck directly to the surface of the thermal spray subject (metal body) "S" or when the particles "m" are stuck directly to underlying particles "m" (and indirectly to the thermal spray subject "S") as shown in Figures 1A though 1C;

(11) Based on my general knowledge of thermal spray coatings, I am aware that it is desirable and common for particles to "flatten" after colliding against and adhering to a surface, as noted in items (4) and (5) above;

(12) It is common knowledge that particles which have "flattened" and adhered to a surface as noted in item (11) will each cover a certain amount of underlying area;

(13) In view of my reasoned understanding as set forth in item (10) above, as well as the common knowledge set forth in item (12) above, it is my further understanding of the original disclosure of this application that as each of the particles "m" of the spray coating collide and "flatten," each of the flattened particles "m" will - directly or indirectly - cover a certain amount of underlying area of the thermal spray subject (metal body) "S," as shown in Figures 1A through 1C;

(14) Based on my general knowledge of thermal spray coatings, it is my understanding and belief that coverage of the certain amount of area as noted in item (13) above is completely consistent with achieving the stated object of preventing corrosion of the thermal spray subject (metal body) "S," as noted in item (1);

(15) In view of my general knowledge of thermal spray coatings, as well as my understanding as noted in item (14) above based on the original disclosure of the above-referenced application, it is my understanding and belief that the term "average area" as

used in the original disclosure, including the section quoted in item (9) above, refers to the average area *covered by* the particles of the spray coating; and

(16) In view of the teachings in the original disclosure of the above-referenced application, my general knowledge of thermal spray coatings, and my reasoned understanding as set forth in items (1) through (15) above, it is my understanding and belief that the teaching "average area of each of molten particles of the thermal spray material when the molten particles have stuck to the surface of the thermal spray subject" as appearing in the original disclosure and quoted in item (9) above means the average area covered by each molten particle after the particles have collided against and adhered (i.e., stuck) directly or indirectly to the metal body. Furthermore, it is my understanding and belief that, based on the above considerations, other persons of ordinary skill in the art would have a similar understanding of the original disclosure.

I further declare that all factual statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,

Date: July 1, 2009

By: \_\_\_\_\_

*Y. Kawaguchi*  
Yasuyuki KAWAGUCHI  
Manager R&D Department  
Plazwire Co., Ltd.